

WHAT IS CLAIMED IS

Sub *X* A method for predicting digital subscriber line (DSL) performance on an existing telephone loop, comprising:

obtaining a topological description of the existing telephone loop;

identifying an equivalent loop to the existing telephone loop from the topological description of the existing telephone loop;

determining DSL performance for the equivalent loop; and

predicting DSL performance for the existing telephone loop from the DSL performance for the equivalent loop.

2. The method of claim 1, wherein the obtaining includes:

receiving at least one of a frequency, length, gauge, temperature, and insulation type associated with the existing telephone loop.

3. The method of claim 1, further comprising:

determining an insertion loss for the existing telephone loop based on the topological description of the existing telephone loop.

4. The method of claim 3, further comprising:

determining a DSL capacity of the existing telephone loop using the insertion loss for the existing telephone loop.

5. The method of claim 4, wherein the determining a DSL capacity includes:
creating a loss curve using the insertion loss, and
integrating the loss curve to determine the DSL capacity of the existing telephone
loop.

6. The method of claim 4, wherein the determining a DSL capacity includes:
creating a loss curve based on the insertion loss over a plurality of frequencies,
and
determining an area below the loss curve over the plurality of frequencies, the area
corresponding to the DSL capacity of the existing telephone loop.

7. The method of claim 4, wherein the existing telephone loop includes an upstream
path and a downstream path; and
wherein the determining a DSL capacity includes:
separately determining the DSL capacity for each of the upstream and downstream
paths.

8. The method of claim 1, further comprising:
determining a DSL capacity of the existing telephone loop from the topological
description of the existing telephone loop.

9. The method of claim 8, wherein the existing telephone loop includes an upstream path and a downstream path; and

wherein the determining a DSL capacity includes:

separately determining the DSL capacity for each of the upstream and downstream paths.

10. The method of claim 9, wherein the identifying includes:

determining equivalent loops corresponding to each of the upstream and downstream paths.

11. The method of claim 8, wherein the identifying includes:

using the DSL capacity to identify the equivalent loop, the equivalent loop including a straight loop of a particular length.

12. The method of claim 11, wherein the using includes:

locating the DSL capacity in a table, and

finding the equivalent loop that corresponds to the DSL capacity in the table.

13. The method of claim 11, wherein the using includes:

determining the particular length of the straight loop from information regarding at least one of bridged-taps, gauge, temperature, and insulation type associated with the existing telephone loop.

14. The method of claim 1, wherein the determining DSL performance for the equivalent loop includes:

selecting DSL performance data from a plurality of previously-obtained DSL performance data.

15. The method of claim 1, wherein the determining DSL performance for the equivalent loop includes:

selecting DSL performance data from a plurality of DSL performance data for loops of different lengths under different crosstalk conditions.

16. The method of claim 1, wherein the predicting includes:

determining spectral interference conditions associated with the existing telephone loop, and

predicting the DSL performance of the existing telephone loop based on the DSL performance for the equivalent loop and the determined spectral interference conditions.

17. A system for predicting digital subscriber line (DSL) performance on existing telephone loops, comprising:

means for obtaining topological descriptions of the existing telephone loops;

means for identifying equivalent loops to the existing telephone loops from the topological descriptions of the existing telephone loops;

means for determining DSL performance for the equivalent loops; and
means for predicting DSL performance for the existing telephone loops from the DSL
performance for the equivalent loops.

18. A system for estimating digital subscriber line (DSL) performance on customer
telephone loops, comprising:

a memory configured to store instructions; and
a processor configured to execute the instructions to receive information regarding the
customer telephone loops, identify equivalent loops corresponding to the customer telephone
loops using the received information, determine DSL performance for the equivalent loops, and
estimate DSL performance for the customer telephone loops from the DSL performance for the
equivalent loops.

19. The system of claim 18, wherein when receiving information regarding the
customer telephone loops, the processor is configured to receive at least one of a frequency,
length, gauge, temperature, and insulation type associated with each of the customer telephone
loops.

20. The system of claim 18, wherein the processor is further configured to determine
an insertion loss for each of the customer telephone loops based on the received information for
the customer telephone loops.

21. The system of claim 20, wherein the processor is further configured to determine a DSL capacity of each of the customer telephone loops using the insertion loss for the existing telephone loops.

22. The system of claim 21, wherein when determining a DSL capacity of each of the customer telephone loops, the processor is configured to create a loss curve using the insertion loss and integrate the loss curve to determine the DSL capacity of the customer telephone loop.

23. The system of claim 21, wherein when determining a DSL capacity of each of the customer telephone loops, the processor is configured to create a loss curve based on the insertion loss over a plurality of frequencies and determine an area below the loss curve over the plurality of frequencies, the area corresponding to the DSL capacity of the customer telephone loop.

24. The system of claim 21, wherein each of the customer telephone loops includes an upstream path and a downstream path; and

wherein when determining a DSL capacity of each of the customer telephone loops, the processor is configured to separately determine the DSL capacity for each of the upstream and downstream paths.

25. The system of claim 18, wherein the processor is further configured to determine a DSL capacity of each of the customer telephone loops from the received information for the customer telephone loops.

26. The system of claim 25, wherein each of the customer telephone loops includes an upstream path and a downstream path; and
wherein when determining a DSL capacity of each of the customer telephone loops, the processor is configured to separately determine the DSL capacity for each of the upstream and downstream paths.

27. The system of claim 26, wherein the processor is configured to determine equivalent loops corresponding to each of the upstream and downstream paths.

28. The system of claim 25, wherein the processor is configured to use the DSL capacity corresponding to each of the customer telephone loops to identify the equivalent loops, each of the equivalent loops including a straight loop of a particular length.

29. The system of claim 28, wherein the processor is configured to locate the DSL capacity corresponding to each of the customer loops in a table and find the equivalent loops that correspond to the DSL capacities in the table.

30. The system of claim 28, wherein the processor is configured to determine the particular lengths of the straight loops from information regarding at least one of bridged-taps, gauge, temperature, and insulation type associated with each of the customer telephone loops.

31. The system of claim 18, wherein when determining DSL performance for each of the equivalent loops, the processor is configured to select DSL performance data from a plurality of previously-obtained DSL performance data.

32. The system of claim 18, wherein when determining DSL performance for each of the equivalent loops, the processor is configured to select DSL performance data from a plurality of DSL performance data for loops of different lengths under different crosstalk conditions.

33. The system of claim 18, wherein the processor is configured to determine spectral interference conditions associated with each of the customer telephone loops and predict the DSL performance of the customer telephone loops based on the DSL performance for the equivalent loops and the determined spectral interference conditions.

34. A computer-readable medium that stores instructions executable by one or more processors to perform a method for estimating digital subscriber line (DSL) performance on a customer telephone loop, comprising:

instructions for determining operating conditions for the customer telephone loop;

instructions for identifying a loop of a particular length that corresponds to the customer telephone loop operating under the determined operating conditions;
instructions for determining DSL performance for the loop of the particular length; and
instructions for estimating DSL performance for the customer telephone loop from the DSL performance for the loop of the particular length.

35. A method for estimating digital subscriber line (DSL) performance on a telephone line, comprising:

identifying an equivalent straight cable that corresponds to the telephone line;
determining DSL performance on the straight cable; and
estimating DSL performance on the telephone line based on the determined DSL performance on the straight cable.

36. A method for predicting asymmetric digital subscriber line (ADSL) performance on an existing telephone loop, comprising:

determining characteristics and operating conditions of the existing telephone loop;
calculating ADSL capacity of the existing telephone loop based on the determined characteristics;
identifying an equivalent loop based on the ADSL capacity and the determined operating conditions of the existing telephone loop;
determining ADSL performance on the equivalent loop; and

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predicting ADSL performance on the existing telephone loop from the determined ADSL performance on the equivalent loop.